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SP290-X Grasshoppers

The University of Tennessee Agricultural Extension Service

UT Extension
SP290-X

Insects

Grasshoppers

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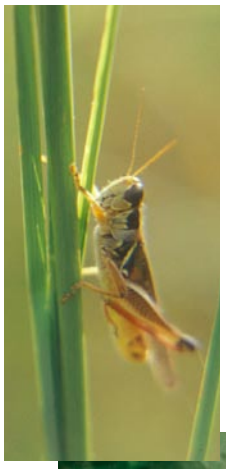
Grasshoppers may at times become serious pests on ornamentals, vegetable and field crops. Grasses and other herbaceous plants are the most common food for these pests, but after those hosts are consumed the grasshoppers often turn to feeding on vegetables, field crops or on leaves and even tender bark of shrubs and trees.

Jack Parker, Knoxville University of Tennessee



Description

Adult grasshoppers have short, thread-like antennae; chewing mouthparts; enlarged hind legs that are specialized for jumping; narrow frontwings; and broad, fan-like hindwings.

Life Cycle

Most grasshoppers will mate and live in the same area during the year. Some species may have such a large increase in their population that they are forced to leave the breeding area.

Females lay eggs in the soil in elongated, 1- to 3-inch masses in late-summer and fall. Eggs are usually deposited in grain stubble, fence rows, ditchbanks, roadsides and meadows. The egg is the overwintering stage. Hatching occurs in the spring as early as late February. Young nymphs (immatures) search for food in the immediate area. The grasshoppers are forced to migrate to other food sources as they become larger and deplete their host plants in the area.

Grasshoppers mature into adults in 40 to 60 days. Mating takes place and the females begin laying eggs. Oviposition (egg-laying) continues for nearly three months due to the differences in hatching time and developmental rate. A single female may lay from 200 to 400 eggs over a period of several weeks.

After oviposition, adults continue to feed until cold weather kills them. Some species may have more than one generation a year in Tennessee. Variations in population levels of grasshoppers are influenced by the environment. High

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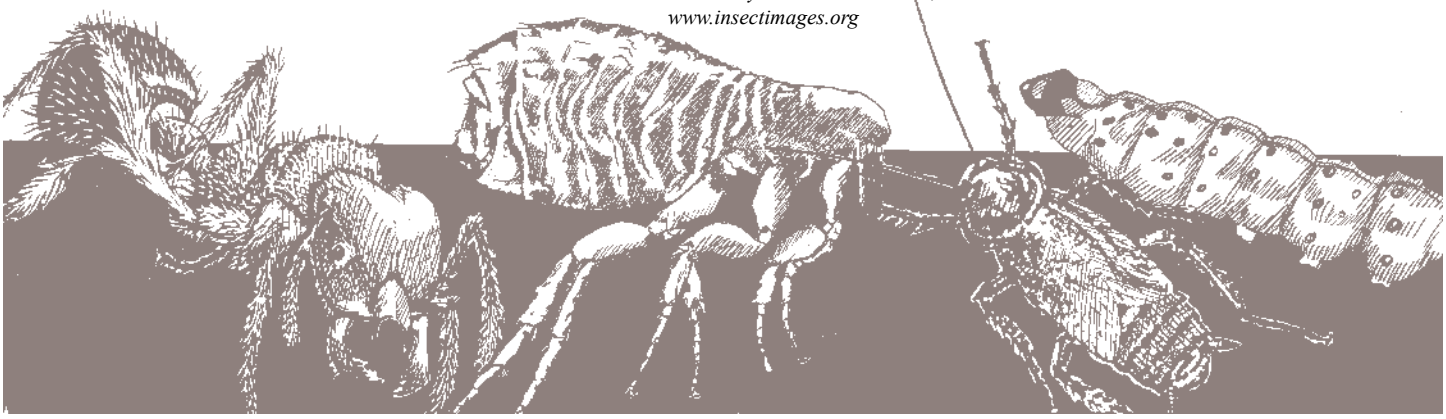

mortality would follow a season such as this: warm spring weather causing premature hatching of eggs, followed by cooler temperatures (preventing normal growth); a brief period of hot weather (favorable for grasshopper diseases); and a cool summer and early fall to delay maturity and to reduce the time needed to lay eggs. A series of warm, dry seasons favor grasshopper outbreaks.

Control

Naturally occurring enemies reduce grasshopper populations. Eggs of certain insects, such as ground beetles, blister beetles and bee flies, are laid in the soil near overwintering grasshopper eggs. Studies have shown that the larvae of these predators can destroy up to 60 percent of grasshopper egg masses laid in a large area. Numbers of mammals, birds and predatory insects feed on grasshoppers. Certain environmental conditions may favor the multiplication of naturally occurring microorganisms and the subsequent infection of grasshoppers.

When natural controls are not sufficient, insecticidal control may be needed. An important factor to take into consideration in obtaining good control of grasshoppers is that they often move in from adjacent roadsides, fencerows and pastures. In these cases, it may be necessary to treat the areas adjacent to the crop to adequately protect it from migrating grasshoppers. In other words, if large numbers of grasshoppers are moving into your crop from adjacent areas, it is often more important to treat the surrounding area than to treat the crop you are trying to protect.

The insecticides carbaryl (Sevin®) or malathion are approved for most garden and field crops. These three insecticides plus cyfluthrin (Tempo®), bifenthrin (Talstar®), deltamethrin (DeltaGard®) and lambda-cyhalothrin (Scimitar®) can be used on lawns and many ornamentals. Chlorpyrifos (Dursban™) can be used on golf courses, sod farms, road medians and industrial plant sites, but not in residential landscapes. Contact your local county Extension office for grasshopper control recommendations on specific host plants.

Baits can be made by combining Sevin® XLR Plus (see label) with a cereal grain substrate (cereal grains or their by-products, such as flaky wheat bran, rolled wheat, rolled oats and/or barley or oat millings) to make a carbaryl bait containing 2 to 10 percent active carbaryl. These carbaryl baits are most effective when spread over mowed or barren areas between the crop being protected and the hatching beds. The hatching beds are the grassy areas, particularly with southern exposure and more sandy soil in which grasshoppers tend to lay most of their eggs. A bait of wheat bran and *Nosema locustae* (Semaspore Bait™), a protozoan that is only toxic to grasshoppers, can be applied to the hatching beds. Semaspore Bait™ should kill about half of the grasshoppers and infect most of the remainder. The infected survivors do not eat much and the few eggs they lay are infected. If cannibalized, they can infect other grasshoppers. The protozoan can overwinter in infected egg cases and cadavers.

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